

SEQUENCE LISTING

<110> Steidler, Lothar
Remaut, Erik
Fiers, Walter

<120> USE OF A CYTOKINE-PRODUCING LACTOCOCCUS STRAIN TO TREAT COLI
TIS

<130> 2676-4779US

<150> PCT/EP99/07800

<151> 1999-10-06

<150> EP 98203529.7

<151> 1998-10-20

<160> 8

<170> PatentIn version 3.0

<210> 1

<211> 21

<212> DNA

<213> Artificial

<220>

<223> Description of Artificial Sequence: primer used for obtainin
g the
plasmid pT1MIL1

<400> 1

cagtacagcc gggaagacaa t
21

<210> 2

<211> 25

<212> DNA

<213> Artificial

<220>

<223> Description of Artificial Sequence: primer used for obtainin
g the
plasmid pT1MIL1

<400> 2

gcactagtta gcttttcatt ttgat

25

<210> 3
 <211> 21
 <212> DNA
 <213> Artificial

<220>

<223> Description of Artificial Sequence: primer used for obtainin
 g the
 plasmid pT1TR5A

<400> 3
 ctggtccctt ctcttggtga c
 21

<210> 4
 <211> 53
 <212> DNA
 <213> Artificial

<220>

<223> Description of Artificial Sequence: primer used for obtainin
 g the
 plasmid pT1TR5A

<400> 4
 ccactagtct attaatgatg atgatgatga tgcgcagtag ctgagtcctg ggg
 53

<210> 5
 <211> 5230
 <212> DNA
 <213> Artificial

<220>

<223> Description of Artificial Sequence: plasmid pTREX1

<400> 5
 gaattcgatt aagtcacatt acctctttta ttagtttttt cttataatct aatgataaca
 60

tttttataat taatctataa accatatccc tctttggaat caaaatttat tatctactcc
 120

tttgtagata tgttataata caagtatcag atctgggaga ccacaacggt ttcccactag
180

aaataatfff gtttaactff agaaaggaga tatacgcacg caggatatct ctagaatgga
240

tccggctgct aacaaagccc gaaaggaagc tgagttggct gctgccaccg ctgagcaata
300

actagcataa ccccttgggg cctctaaacg ggtcttgagg ggttttttgc tgaaaggagg
360

aactatatcc ggatgacctg caggcaagct ctagaatcga tacgattttg aagtggcaac
420

agataaaaaa aagcagttta aaattgttgc tgaactttta aaacaagcaa atacaatcat
480

tgtcgcaaca gatagcgaca gagaaggcga aaacattgcc tggtcgatca ttcataaagc
540

aatgccttt tctaaagata aaacgtataa aagactatgg atcaatagtt tagaaaaaga
600

tgtgatccgt agcggttttc aaaatttgca accaggaatg aattactatc ccttttatca
660

agaagcgcaa aagaaaaacg aaatgataca ccaatcagtg caaaaaaaga tataatggga
720

gataagacgg ttcgtgttcg tgctgacttg caccatatca taaaaatcga aacagcaaag
780

aatggcggaa acgtaaaaga agttatggaa ataagactta gaagcaaact taagagtgtg
840

ttgatagtgc agtatcttaa aattttgtat aataggaatt gaagttaaat tagatgctaa
900

aaatttgtaa ttaagaagga gtgattacat gaacaaaaat ataaaatatt ctcaaaactt
960

tttaacgagt gaaaaagtac tcaaccaa atataaaacaa ttgaatttaa aagaaaccga
1020

taccgtttac gaaattggaa caggtaaagg gcatttaacg acgaaactgg ctaaaataag
1080

taaacaggta acgtctattg aattagacag tcctctattc aacttatcgt cagaaaaatt
1140

aaaactgaat actcgtgtca ctttaattca ccaagatatt ctacagtttc aattccctaa
1200

caaacagagg tataaaaattg ttgggagtat tccttaccat ttaagcacac aaattattaa
1260

aaaagtgggt tttgaaagcc atgcgtctga catctatctg attggtgaag aaggattcta
1320

caagcgtacc ttggatattc accgaacact agggttgctc ttgcacactc aagtctcgat
1380

tcagcaattg ctttaagctgc cagcggaaatg ctttcatcct aaacccaaaag taaacagtgt
1440

cttaataaaa cttacccgcc ataccacaga tgttccagat aaatattgga agctatatac
1500

gtactttgtt tcaaaatggg tcaatcgaga atatcgtaa ctgtttacta aaaatcagtt
1560

tcatcaagca atgaaacacg ccaaagtaaa caatttaagt accgttactt atgagcaagt
1620

attgtctatt ttttaatagtt atctattatt taacgggagg aaataattct atgagtcgct
1680

tttgtaaatt tggaaagtta cacgttacta aagggaatgt agataaatta ttaggtatac
1740

tactgacagc ttccaaggag ctaaagaggt ccctagcgtc cttatcatgg ggaagctcgg
1800

atcatatgca agacaaaata aactcgcaac agcacttgga gaaatgggac gaatcgagaa
1860

aaccctcttt acgctggatt acatatctaa taaagccgta aggagacggg ttcaaaaagg
1920

tttaataaaa ggagaagcaa tcaatgcatt agctagaact atattttttg gacaacgtgg
1980

agaattttaga gaacgtgctc tccaagacca gttacaaaga gctagtgcac taaacataat
2040

tattaacgct ataagtgtgt ggaacactgt atatatggaa aaagccgtag aagaattaaa
2100

agcaagagga gaatttagag aagatttaaat gccatatgcg tggccgtag gatgggaaca
2160

tatcaatttt cttggagaat acaaatttga aggattacat gacactgggc aaatgaattt
2220

acgtccttta cgtataaaag agccgtttta ttcttaatat aacggctctt tttatagaaa
2280

aaatccttag cgtggttttt ttccgaaatg ctggcggtag cccaagaatt agaaatgagt
2340

agatcaaatt attcacgaat agaatcagga aaatcagatc caaccataaa aacactagaa
2400

caaattgcaa agttaactaa ctcaacgcta gtagtggatt taatcccaaa tgagccaaca
2460

gaaccagagc cagaaacaga atcagaacaa gtaacattgg atttagaat ggaagaagaa
2520

aaaagcaatg acttcgtgtg aataatgcac gaaatcgttg cttatttttt tttaaaagcg
2580

gtatactaga tataacgaaa caacgaactg aatagaaacg aaaaaagagc catgacacat
2640

ttataaaatg ttgacgaca ttttataaat gcatagcccg ataagattgc caaccaacg
2700

cttatcagtt agtcagatga actcttccct cgtaagaagt tatttaatta actttgtttg
2760

aagacggtat ataaccgtac tatcattata tagggaaatc agagagtttt caagtatcta
2820

agctactgaa tttagaatt gttaagcaat caatcggaaa tcgttttgatt gctttttttg
2880

tattcattta tagaaggtgg agtttgtatg aatcatgatg aatgtaaaac ttatataaaa
2940

aatagtttat tggagataag aaaattagca aatatctata cactagaaac gtttaagaaa
3000

gagttagaaa agagaaatat ctacttagaa acaaaatcag ataagtattt ttcttcggag
3060

ggggaagatt atatatataa gttaatagaa aataacaaaa taatttattc gattagtgga
3120

aaaaaattga cttataaagg aaaaaaatct ttttcaaaac atgcaatatt gaaacagttg
3180

aatgaaaaag caaaccaagt taattaaaca acctatttta taggatttat aggaaaggag
3240

aacagctgaa tgaatatccc ttttgttgta gaaactgtgc ttcattgacgg cttgttaaag
3300

tacaaattta aaaatagtaa aattcgctca atcactacca agccaggtaa aagcaaaggg
3360

gctatTTTTg cgtatcgctc aaaatcaagc atgattggcg gtcgtggtgt tgttctgact
3420

tccgaggaag cgattcaaga aaatcaagat acatttacac attggacacc caacgtttat
3480

cgttatggaa cgtatgcaga cgaaaaccgt tcatacacga aaggacattc tgaaaacaat
3540

ttaagacaaa tcaatacctt ctttattgat tttgatattc acacggcaaa agaaactatt
3600

tcagcaagcg atattttaac aaccgctatt gatttaggtt ttatgcctac tatgattatc
3660

aatctgata aaggttatca agcatatttt gttttagaaa cgccagtcta tgtgacttca
3720

aatcagaat ttaaattctgt caaagcagcc aaaataattt cgcaaaatat ccgagaatat
3780

tttgaaagt ctttgccagt tgatctaacg tgtaatcatt ttggtattgc tcgcatacca
3840

agaacggaca atgtagaatt ttttgatcct aattaccgtt attctttcaa agaatggcaa
3900

gattggtctt tcaaacaac agataataag ggctttactc gttcaagtct aacgggttta
3960

agcggtagacag aaggcaaaaa acaagtagat gaaccctggt ttaatctctt attgcacgaa
4020

acgaaatddd caggagaaaa gggtttaata gggcgtaata acgtcatggt taccctctct
4080

ttagcctact ttagttcagg ctattcaatc gaaacgtgcg aatataatat gtttgagttt
4140

aataatcgat tagatcaacc cttagaagaa aaagaagtaa tcaaaattgt tagaagtgcc
4200

tattcagaaa actatcaagg ggctaatagg gaatacatta ccattctttg caaagcttgg
4260

gtatcaagtg atttaaccag taaagattta tttgtccgtc aagggtgggt taaattcaag
4320

aaaaaaagaa gcgaacgtca acgtgttcat ttgtcagaat ggaaagaaga ttaatggct
4380

tatattagcg aaaaaagcga tgtatacaag ccttatttag tgacgaccaa aaaagagatt
4440

agagaagtgc taggcattcc tgaacggaca ttagataaat tgctgaagggt actgaaggcg
4500

aatcaggaaa ttttctttaa gattaaacca ggaagaaatg gtggcattca acttgctagt
4560

gttaaatchat tgttgctatc gatcattaaa gtaaaaaaag aagaaaaaga aagctatata
4620

aaggcgctga caaattcttt tgacttagag catacattca ttcaagagac tttaacaag
4680

ctagcagaac gccctaaaac ggacacacaa ctcgatttgt ttagctatga tacaggctga
4740

aaataaaacc cgcactatgc cattacattt atatctatga tacgtgtttg ttttttcttt
4800

gctgttttagc gaatgattag cagaaatata cagagtaaga ttttaattaa ttattagggg
4860

gagaaggaga gagtagcccg aaaactttta gttggcttgg actgaacgaa gtgagggaaa
4920

ggctactaaa acgtcgaggg gcagtgagag cgaagcgaac acttgatttt ttaattttct
4980

atcttttata ggtcattaga gtatacttat ttgtcctata aactatttag cagcataata
5040

gatttattga ataggtcatt taagttgagc atattagagg aggaaaatct tggagaaata
5100

tttgaagaac ccgattacat ggattggatt agttcttgtg gttacgtggt ttttaactaa
5160

aagtagtgaa tttttgattt ttggtgtgtg tgtcttggtg ttagtatttg ctagtcaaag
5220

tgattaaata
5230

<210> 6

<211> 5906

<212> DNA

<213> Artificial

<220>

<223> Description of Artificial Sequence: plamsid pT1NX

<400> 6

gaattcgatt aagtcattctt acctctttta ttagtttttt cttataatct aatgataaca
60

tttttataat taatctataa accatatccc tctttggaat caaaatttat tatctactcc
120

tttgtagata tgttataata caagtatcag atctgggaga ccacaacggt ttcccactag
180

aaataatttt gtttaacttt agaaaggaga tatacgcattg aaaaaaaga ttatctcagc
240

tattttaatg tctacagtca tactttctgc tgcagccccc ttgtcaggtg ttacgccgg
300

cgacggatcc aaaagaggaa gacaataaca agcctggcaa agaagacaat aacaagcctg
360

gcaaagaaga caataacaag cctggcaaag aagacaacaa caagcctggc aaagaagaca
420

acaacaagcc tggtaaagaa gacaacaaca agcctggcaa agaagacggc aacaagcctg
480

gtaaagaaga caacaaaaaa cctggtaaag aagatggcaa caagcctggg aaagaagaca
540

acaaaaaacc tggtaaagaa gacggcaaca agcctggcaa agaagatggc aacaaacctg
600

gtaaagaaga tggtaacgga gtacatgtcg ttaaacctgg tgatacagta aatgacattg
660

caaaagcaaa cggcactact gctgacaaaa ttgctgcaga taacaaatta gctgataaaa
720

acatgatcaa acctgggtcaa gaacttggtg ttgataagaa gcaaccagca aacctatgcag
780

atgctaacaa agctcaagca ttaccagaaa ctggcgaaga aaatccattc atcggtacaa
840

ctgtatttgg tggattatca ttagccttag gtgcagcggt attagctgga cgtcgtcgcg
900

aactataact agtagatccg gctgctaaca aagcccgaaa ggaagctgag ttggctgctg
960

ccaccgctga gcaataacta gcataacccc ttggggcctc taaacgggtc ttgagggggt
1020

ttttgctgaa aggaggaact atatccggat gacctgcagg caagctctag aatcgatagc
1080

attttgaagt ggcaacagat aaaaaaagc agttttaaatt tgttgctgaa cttttaaaac
1140

aagcaaatac aatcattgtc gcaacagata gcgacagaga aggcgaaaac attgcctggg
1200

cgatcattca taaagcaaatt gccttttcta aagataaaac gtataaaaga ctatggatca
1260

atagttttaga aaaagatgtg atccgtagcg gttttcaaaa tttgcaacca ggaatgaatt
1320

actatccctt ttatcaagaa gcgcaaaaga aaaacgaaat gatacaccaa tcagtgcaaa
1380

aaaagatata atgggagata agacggttcg tggtcgtgct gacttgcacc atatcataaa
1440

aatcgaaaca gcaaagaatg gcggaaacgt aaaagaagtt atggaaataa gacttagaag
1500

caaacttaag agtgtgttga tagtgcagta tcttaaaatt ttgtataata ggaattgaag
1560

ttaaattaga tgctaaaaat ttgtaattaa gaaggagtga ttacatgaac aaaaatataa
1620

aatatttctca aaacttttta acgagtgaaa aagtactcaa ccaaataata aaacaattga
1680

atttaaaaga aaccgatacc gtttacgaaa ttggaacagg taaagggcat ttaacgacga
1740

aactggctaa aataagtaaa caggtaacgt ctattgaatt agacagtcac ctattcaact
1800

tatcgtcaga aaaattaaaa ctgaatactc gtgtcacttt aattcaccaa gatattctac
1860

agtttcaatt ccctaacaaa cagaggtata aaattggttg gagtattcct taccatttaa
1920

gcacacaaat tattaacaaa gtgggttttg aaagccatgc gtctgacatc tatctgattg
1980

ttgaagaagg attctacaag cgtaccttgg atattcacccg aacactaggg ttgctcttgc
2040

acactcaagt ctcgattcag caattgctta agctgccagc ggaatgcttt catcctaaac
2100

caaaagtaaa cagtgtctta ataaaactta cccgcctacac cacagatgtt ccagataaat
2160

attggaagct atatacgtac tttgtttcaa aatgggtcaa tcgagaatat cgtcaactgt
2220

ttactaaaaa tcagtttcat caagcaatga aacacgccaa agtaaacaat ttaagtaccg
2280

ttacttatga gcaagtattg tctattttta atagttatct attattttaac gggaggaaat
2340

aattctatga gtcgcttttg taaatttgga aagttacacg ttactaaagg gaatgtagat
2400

aaattattag gtatactact gacagcttcc aaggagctaa agaggtcctt agcgctctta
2460

tcatggggaa gctcggatca tatgcaagac aaaataaact cgcaacagca cttggagaaa
2520

tgggacgaat cgagaaaacc ctctttacgc tggattacat atctaataaa gccgtaagga
2580

gacgggttca aaaaggttta aataaaggag aagcaatcaa tgcattagct agaactatat
2640

tttttggaca acgtggagaa tttagagaac gtgctctcca agaccagtta caaagagcta
2700

gtgcactaaa cataattatt aacgctataa gtgtgtggaa cactgtatat atggaaaaag
2760

ccgtagaaga attaaaagca agaggagaat ttagagaaga tttaatgcca tatgcgtggc
2820

cgttaggatg ggaacatatc aattttcttg gagaatacaa atttgaagga ttacatgaca
2880

ctgggcaaatt gaatttacgt cctttacgta taaaagagcc gttttattct taatataacg
2940

gctcttttta tagaaaaaat ccttagcgtg gtttttttcc gaaatgctgg cggtagccca
3000

agaattagaa atgagtagat caaattattc acgaatagaa tcaggaaaat cagatccaac
3060

cataaaaaca ctagaacaaa ttgcaaagtt aactaactca acgctagtag tggatttaat
3120

cccaaatgag ccaacagaac cagagccaga aacagaatca gaacaagtaa cattggattt
3180

agaaatggaa gaagaaaaaa gcaatgactt cgtgtgaata atgcacgaaa tcgttgctta
3240

ttttttttta aaagcggat actagatata acgaaacaac gaactgaata gaaacgaaaa
3300

aagagccatg acacatttat aaaatgtttg acgacatttt ataatgcat agcccgataa
3360

gattgcaaaa ccaacgctta tcagtttagtc agatgaactc ttcctcgtta agaagttatt
3420

taattaactt tgtttgaaga cggtatataa ccgtactatc attatatagg gaaatcagag
3480

agttttcaag tatctaagct actgaattta agaattgtta agcaatcaat cggaaatcgt
3540

ttgattgctt tttttgtatt catttataga aggtggagtt tgtatgaatc atgatgaatg
3600

taaaacttat ataaaaaata gtttattgga gataagaaaa ttagcaaata tctatacact
3660

agaaacgttt aagaaagagt tagaaaagag aaatatctac ttagaaacaa aatcagataa
3720

gtatttttct tcggagggggg aagattatat atataagtta atagaaaata acaaaataat
3780

ttattcgatt agtggaaaaa aattgactta taaaggaaaa aaatcttttt caaaacatgc
3840

aatattgaaa cagttgaatg aaaaagcaaa ccaagttaat taaacaacct attttatagg
3900

atttatagga aaggagaaca gctgaatgaa tatccctttt gttgtagaaa ctgtgcttca
3960

tgacggcttg ttaaagtaca aatttaaaaa tagtaaaatt cgctcaatca ctaccaagcc
4020

aggtaaaagc aaaggggcta tttttgcgta tcgctcaaaa tcaagcatga ttggcggctcg
4080

tggtgttggt ctgacttccg aggaagcgat tcaagaaaat caagatacat ttacacattg
4140

gacacccaac gtttatcggt atggaacgta tgcagacgaa aaccgttcat acacgaaagg
4200

acattctgaa aacaatttaa gacaaatcaa taccttcttt attgattttg atattcacac
4260

ggcaaaagaa actatttcag caagcgatat tttaacaacc gctattgatt taggttttat
4320

gcctactatg attatcaaatt ctgataaagg ttatcaagca tattttggtt tagaaacgcc
4380

agtctatgtg acttcaaaat cagaatttaa atctgtcaaa gcagccaaaa taatttcgca
4440

aaatatccga gaatattttg gaaagtcttt gccagttgat ctaacgtgta atcattttgg
4500

tattgctcgc ataccaagaa cggacaatgt agaatttttt gatcctaatt accgttattc
4560

tttcaaagaa tggcaagatt ggtctttcaa acaaacagat aataagggct ttactcgttc
4620

aagtctaacg gttttaagcg gtacagaagg caaaaaacaa gtagatgaac cctgggttaa
4680

tctcttattg cacgaaacga aattttcagg agaaaagggt ttaatagggc gtaataacgt
4740

catgtttacc ctctcttttag cctacttttag ttcaggctat tcaatcgaaa cgtgcgaata
4800

taatatgttt gagtttaata atcgattaga tcaaccctta gaagaaaaag aagtaatcaa
4860

aattgttaga agtgcctatt cagaaaacta tcaaggggct aataggggaat acattaccat
4920

tctttgcaaa gcttgggtat caagtgattt aaccagtaaa gatttatattg tccgtcaagg
4980

gtggttttaa ttcaagaaaa aaagaagcga acgtcaacgt gttcatttgt cagaatggaa
5040

agaagattta atggcttata ttagcgaaaa aagcgatgta tacaagcctt atttagtgac
5100

gaccaaaaaa gagattagag aagtgctagg cattcctgaa cggacattag ataaattgct
5160

gaaggctactg aaggcgaatc aggaaatttt ctttaagatt aaaccaggaa gaaatgggtg
5220

cattcaactt gctagtgtta aatcattgtt gctatcgatc attaaagtaa aaaaagaaga
5280

aaaagaaagc tatataaagg cgctgacaaa ttcttttgac ttagagcata cattcattca
5340

agagacttta aacaagctag cagaacgccc taaaacggac acacaactcg atttgtttag
5400

ctatgatata ggctgaaaat aaaacccgca ctatgccatt acatttatat ctatgatagc
5460

tgtttgTTTT ttctttgctg tttagcgaat gattagcaga aatatacaga gtaagatttt
5520

aattaattat tagggggaga aggagagagt agcccgaaaa cttttagttg gcttggactg
5580

aacgaagtga gggaaaggct actaaaacgt cgaggggcag tgagagcgaa gcgaacactt
5640

gattttttaa ttttctatct tttataggtc attagagtat acttatttgt cctataaact
5700

atttagcagc ataatagatt tattgaatag gtcatttaag ttgagcatat tagaggagga
5760

aatcttgga gaaatatttg aagaacccga ttacatggat tggattagtt cttgtgggta
5820

cgtggTTTTT aactaaaagt agtgaatttt tgatttttgg tgtgtgtgtc ttgttggttag
5880

tatttgctag tcaaagtgat taaata
5906

<210> 7

<211> 5770

<212> DNA

<213> Artificial

<220>

<223> Description of Artificial Sequence: plasmid pT1MIL10

<400> 7

gaattcgatt aagtcatttt acctctttta ttagtttttt cttataatct aatgataaca

60

tttttataat taatctataa accatatccc tctttggaat caaaatttat tatctactcc
120

tttgtagata tgttataata caagtatcag atctgggaga ccacaacggt ttcccactag
180

aaataatttt gtttaacttt agaaaggaga tatacgcacg aaaaaaaga ttatctcagc
240

tattttaatg tctacagtca tactttctgc tgcagccccg ttgtcaggtg tttacgcccc
300

gtacagccgg gaagacaata actgcaccca cttcccagtc ggccagagcc acatgctcct
360

agagctgcgg actgccttca gccagggtgaa gactttcttt caaacaagg accagctgga
420

caacatactg ctaaccgact ccttaatgca ggactttaag ggttacttgg gttgccaagc
480

cttatcgga atgatccagt tttacctggt agaagtgatg cccagggcag agaagcatgg
540

cccagaaatc aaggagcatt tgaattccct gggtgagaag ctgaagacc tcaggatgcg
600

gctgaggcgc tgtcatcgat ttctcccctg tgaaaataag agcaaggcag tggagcaggt
660

gaagagtgat ttttaataagc tccaagacca aggtgtctac aaggccatga atgaatttga
720

catcttcac aactgcatag aagcatacat gatgatcaaa atgaaaagct aactagtaga
780

tccggctgct aacaaagccc gaaaggaagc tgagttggct gctgccaccg ctgagcaata
840

actagcataa ccccttgggg cctctaaacg ggtcttgagg ggttttttgc tgaaaggagg
900

aactatatcc ggatgacctg caggcaagct ctagaatcga tacgattttg aagtggcaac
960

agataaaaaa aagcagttta aaattggtgc tgaactttta aaacaagcaa atacaatcat

1020

tgtcgcaaca gatagcgaca gagaaggcga aaacattgcc tggtcgatca ttcataaagc
1080

aaatgccttt tctaaagata aaacgtataa aagactatgg atcaatagtt tagaaaaaga
1140

tgtgatccgt agcggttttc aaaatttgca accaggaatg aattactatc ccttttatca
1200

agaagcgcaa aagaaaaacg aaatgatata ccaatcagtg caaaaaaaga tataatggga
1260

gataagacgg ttcgtgttcg tgctgacttg caccatatca taaaaatcga aacagcaaag
1320

aatggcggaa acgtaaaaga agttatggaa ataagactta gaagcaaact taagagtgtg
1380

ttgatagtgc agtatcttaa aattttgtat aataggaatt gaagttaaatt tagatgctaa
1440

aaatttgtaa ttaagaagga gtgattacat gaacaaaaat ataaaatatt ctcaaaactt
1500

tttaacgagt gaaaaagtac tcaaccaaatt aataaaacaa ttgaatttaa aagaaaccga
1560

taccgtttac gaaattggaa caggtaaagg gcatttaacg acgaaactgg ctaaaataag
1620

taaacaggta acgtctattg aattagacag tcctctattc aacttatcgt cagaaaaatt
1680

aaaactgaat actcgtgtca ctttaattca ccaagatatt ctacagtttc aattccctaa
1740

caaacagagg tataaaattg ttgggagtat tccttaccat ttaagcacac aaattattaa
1800

aaaagtgggt tttgaaagcc atgcgtctga catctatctg attgttgaag aaggattcta
1860

caagcgtacc ttggatatct accgaacact agggttgctc ttgcacactc aagtctcgat
1920

tcagcaattg ctttaagctgc cagcgggaatg ctttcatcct aaaccaaag taaacagtgt

1980

cttaataaaa cttacccgcc ataccacaga tgttccagat aaatattgga agctatatac
2040

gtactttgtt tcaaaatggg tcaatcgaga atatcgtcaa ctgtttacta aaaatcagtt
2100

tcataagca atgaaacacg ccaaagtaaa caatttaagt accgttactt atgagcaagt
2160

attgtctatt tttaatagtt atctattatt taacgggagg aaataattct atgagtcgct
2220

tttgtaaatt tggaaagtta cacgttacta aagggaatgt agataaatta ttaggtatac
2280

tactgacagc ttccaaggag ctaaagaggt ccctagcgct cttatcatgg ggaagctcgg
2340

atcatatgca agacaaaata aactcgcaac agcacttgga gaaatgggac gaatcgagaa
2400

aaccctcttt acgctggatt acatatctaa taaagccgta aggagacggg ttcaaaaagg
2460

tttaaataaa ggagaagcaa tcaatgcatt agctagaact atattttttg gacaacgtgg
2520

agaatttaga gaacgtgctc tccaagacca gttacaaaga gctagtgcac taaacataat
2580

tattaacgct ataagtgtgt ggaacactgt atatatggaa aaagccgtag aagaattaaa
2640

agcaagagga gaatttagag aagatttaat gccatatgcg tggccgtag gatgggaaca
2700

tatcaatttt cttggagaat acaaatttga aggattacat gacactgggc aatgaattt
2760

acgtccttta cgtataaaag agccgtttta ttcttaatat aacggctctt tttatagaaa
2820

aatcccttag cgtgggtttt ttccgaaatg ctggcggtac cccaagaatt agaatgagt
2880

agatcaaatt attcacgaat agaatcagga aaatcagatc caaccataaa aacactagaa

2940

caaattgcaa agttaactaa ctcaacgcta gtagtggatt taatcccaaa tgagccaaca
3000

gaaccagagc cagaaacaga atcagaacaa gtaacattgg atttagaaat ggaagaagaa
3060

aaaagcaatg acttcgtgtg aataatgcac gaaatcgttg cttatttttt tttaaaagcg
3120

gtatactaga tataacgaaa caacgaactg aatagaaacg aaaaaagagc catgacacat
3180

ttataaaatg ttgacgaca ttttataaat gcatagcccg ataagattgc caaccaacg
3240

cttatcagtt agtcagatga actcttcctt cgtaagaagt tatttaatta actttgtttg
3300

aagacggtat ataaccgtac tatcattata tagggaaatc agagagtttt caagtatcta
3360

agctactgaa ttttaagaatt gttaagcaat caatcggaaa tcgtttgatt gctttttttg
3420

tattcattta tagaaggtgg agtttgtatg aatcatgatg aatgtaaaac ttatataaaa
3480

aatagtttat tggagataag aaaattagca aatatctata cactagaaac gtttaagaaa
3540

gagttagaaa agagaaatat ctacttagaa acaaaatcag ataagtattt ttcttcggag
3600

ggggaagatt atatatataa gttaatagaa aataacaaaa taatttattc gattagtgga
3660

aaaaaattga cttataaagg aaaaaaatct ttttcaaac atgcaatatt gaaacagttg
3720

aatgaaaaag caaccaagt taattaaaca acctatttta taggatttat aggaaaggag
3780

aacagctgaa tgaatatccc ttttgttgta gaaactgtgc ttcattgacgg cttgttaaag
3840

tacaaattta aaaatagtaa aattcgctca atcactacca agccaggtaa aagcaaaggg

3900

gctatTTTTg cgtatcgctc aaaatcaagc atgattggcg gtcgtggtgt tgttctgact
3960

tccgaggaag cgattcaaga aaatcaagat acatttacac attggacacc caacgtttat
4020

cgttatggaa cgtatgcaga cgaaaaccgt tcatacacga aaggacattc tgaaaacaat
4080

ttaagacaaa tcaatacctt ctttattgat ttgatattc acacggcaaa agaaactatt
4140

tcagcaagcg atattttaac aaccgctatt gatttaggtt ttatgcctac tatgattatc
4200

aatctgata aaggttatca agcatatTTT gtttagaaa cgccagtcta tgtgacttca
4260

aatcagaat ttaaattctgt caaagcagcc aaaataattt cgcaaaatat ccgagaatat
4320

tttgaaaagt ctttgccagt tgatctaacg tgtaatcatt ttggtattgc tcgcatacca
4380

agaacggaca atgtagaatt ttttgatcct aattaccgtt attctttcaa agaattggcaa
4440

gattggtctt tcaaacaac agataataag ggctttactc gttcaagtct aacgggtttta
4500

agcggtagag aaggcaaaaa acaagtagat gaaccctggt ttaatctctt attgcacgaa
4560

acgaaatTTT caggagaaaa gggtttaata gggcgtaata acgtcatggt taccctctct
4620

ttagcctact ttagttcagg ctattcaatc gaaacgtgcg aatataatat gtttgagttt
4680

aataatcgat tagatcaacc cttagaagaa aaagaagtaa tcaaaattgt tagaagtgcc
4740

tattcagaaa actatcaagg ggctaatagg gaatacatta ccattctttg caaagcttgg
4800

gtatcaagtg atttaaccag taaagattta ttgtccgctc aagggtggtt taaattcaag

4860

aaaaaaagaa gcgaacgtca acgtgttcat ttgtcagaat ggaaagaaga tttaatggct
4920

tatattagcg aaaaaagcga tgtatacaag ccttatttag tgacgaccaa aaaagagatt
4980

agagaagtgc taggcattcc tgaacggaca ttagataaat tgctgaagggt actgaaggcg
5040

aatcaggaaa ttttctttaa gattaaacca ggaagaaatg gtggcattca acttgctagt
5100

gttaaatcat tgttgctatc gatcattaaa gtaaaaaaag aagaaaaaga aagctatata
5160

aaggcgctga caaattcttt tgacttagag catacattca ttcaagagac tttaaacaag
5220

ctagcagaac gccctaaaac ggacacacaa ctcgatttgt ttagctatga tacaggctga
5280

aaataaaacc cgcactatgc cattacattt atatctatga tacgtgtttg ttttttcttt
5340

gctgttttagc gaatgattag cagaaatata cagagtaaga ttttaattaa ttattagggg
5400

gagaaggaga gagtagcccg aaaactttta gttggcttgg actgaacgaa gtgagggaaa
5460

ggctactaaa acgtcgaggg gcagtgagag cgaagcgaac acttgatttt ttaattttct
5520

atcttttata ggtcattaga gtatacttat ttgtcctata aactatttag cagcataata
5580

gatttattga ataggtcatt taagttgagc atattagagg aggaaaatct tggagaaata
5640

tttgaagaac ccgattacat ggattggatt agttcttgtg gttacgtggt ttttaactaa
5700

aagtagtgaa tttttgattt ttgggtgtgtg tgtcttgttg ttagtatttg ctagtcaaag
5760

tgattaaata

5770

<210> 8

<211> 5870

<212> DNA

<213> Artificial

<220>

<223> Description of Artificial Sequence: plasmid pT1TR5AH

<400> 8

gaattcgatt aagtcattctt acctctttta ttagttttttt cttataatct aatgataaca
60

tttttataat taatctataa accatatccc tctttggaat caaaatttat tatctactcc
120

tttgtagata tgttataata caagtatcag atctgggaga ccacaacggt ttcccactag
180

aaataatttt gtttaacttt agaaaggaga tatacgcattg aaaaaaaga ttatctcagc
240

tattttaatg tctacagtca tactttctgc tgcagcccg ttgtcagggtg ttacgcct
300

ggcccttct cttggtgacc gggagaagag ggatagcttg tgtccccaag gaaagtatgt
360

ccattctaag aacaattcca tctgctgcac caagtgccac aaaggaacct acttggtgag
420

tgactgtccg agcccagggc gggatacagt ctgcaggag tgtgaaaagg gcacctttac
480

ggcttcccag aattacctca ggcagtgtct cagttgcaag acatgtcgga aagaaatgtc
540

ccaggtggag atctctcctt gccaaagtga caaggacacg gtgtgtggct gtaaggagaa
600

ccagttccaa cgctacctga gtgagacaca cttccagtgc gtggactgca gccctgctt
660

caacggcacc gtgacaatcc cctgtaagga gactcagaac accgtgtgta actgccatgc
720

agggttcttt ctgagagaaa gtgagtgcgt cccttgcagc cactgcaaga aaaatgagga
780

gtgtatgaag ttgtgcctac ctctccgct tgcaaattgc acaaaccccc aggactcagg
840

tactgcgcat catcatcatc atcattaata gactagtaga tccggctgct aacaaagccc
900

gaaaggaagc tgagttggct gctgccaccg ctgagcaata actagcataa ccccttgggg
960

cctctaaacg ggtcttgagg ggttttttgc tgaaaggagg aactatatcc ggatgacctg
1020

caggcaagct ctagaatcga tacgattttg aagtggcaac agataaaaaa aagcagttta
1080

aaattgttgc tgaactttta aaacaagcaa atacaatcat tgtcgcaaca gatagcgaca
1140

gagaaggcga aaacattgcc tggtcgatca ttcataaagc aaatgccttt tctaaagata
1200

aaacgtataa aagactatgg atcaatagtt tagaaaaaga tgtgatccgt agcggttttc
1260

aaaatttgca accaggaatg aattactatc ctttttatca agaagcgcaa aagaaaaacg
1320

aatgataca ccaatcagtg caaaaaaaga tataatggga gataagacgg ttcgtgttcg
1380

tgctgacttg caccatatca taaaaatcga aacagcaaag aatggcggaa acgtaaaaga
1440

agttatggaa ataagactta gaagcaaact taagagtgtg ttgatagtgc agtatcttaa
1500

aattttgtat aataggaatt gaagttaaatt tagatgctaa aaatttgtaa ttaagaagga
1560

gtgattacat gaacaaaaat ataaaatatt ctcaaaactt tttacgagt gaaaaagtac
1620

tcaaccaaatt aataaaacaa ttgaatttaa aagaaaccga taccgtttac gaaattggaa
1680

caggtaaagg gcatttaacg acgaaactgg ctaaaataag taaacaggta acgtctattg
1740

aattagacag tcattctattc aacttatcgt cagaaaaatt aaaactgaat actcgtgtca
1800

ctttaattca ccaagatatt ctacagtttc aattccctaa caaacagagg tataaaattg
1860

ttgggagtat tccttaccat ttaagcacac aaattattaa aaaagtgggtt tttgaaagcc
1920

atgcgtctga catctatctg attggtgaag aaggattcta caagcgtacc ttggatattc
1980

accgaacact aggggttgctc ttgcacactc aagtctcgat tcagcaattg cttaagctgc
2040

cagcggaatg ctttcatcct aaacccaaaag taaacagtgt cttataaaaa cttaccgcc
2100

ataccacaga tgttccagat aaatattgga agctatatac gtactttgtt tcaaaatggg
2160

tcaatcgaga atatcgtaa ctgtttacta aaaatcagtt tcatcaagca atgaaacacg
2220

ccaaagtaaa caatttaagt accgttactt atgagcaagt attgtctatt tttaatagtt
2280

atctattatt taacgggagg aaataattct atgagtcgct tttgtaaatt tggaaagtta
2340

cacgttacta aagggaatgt agataaatta ttaggtatac tactgacagc ttccaaggag
2400

ctaaagaggt ccctagcgct cttatcatgg ggaagctcgg atcatatgca agacaaaata
2460

aactcgcaac agcacttgga gaaatgggac gaatcgagaa aaccctcttt acgctggatt
2520

acatatctaa taaagccgta aggagacggg ttcaaaaagg tttaaataaa ggagaagcaa
2580

tcaatgcatt agctagaact atatTTTTTg gacaacgtgg agaatttaga gaacgtgctc
2640

tccaagacca gttacaaaga gctagtgcac taaacataat tattaacgct ataagtgtgt
2700

ggaacactgt atatatggaa aaagccgtag aagaattaaa agcaagagga gaatttagag
2760

aagattttaat gccatatgcg tggccgttag gatgggaaca tatcaatttt cttggagaat
2820

acaaatttga aggattacat gacactgggc aatgaattt acgtccttta cgtataaaag
2880

agccgtttta ttcttaatat aacggctctt tttatagaaa aaatccttag cgtgggtttt
2940

ttccgaaatg ctggcggtac cccaagaatt agaatgagt agatcaaatt attcacgaat
3000

agaatcagga aaatcagatc caaccataaa aacactagaa caaattgcaa agttaactaa
3060

ctcaacgcta gtagtggatt taatcccaaa tgagccaaca gaaccagagc cagaaacaga
3120

atcagaacaa gtaacattgg atttagaaat ggaagaagaa aaaagcaatg acttcgtgtg
3180

aataatgcac gaaatcgttg cttatttttt tttaaaagcg gtatactaga tataacgaaa
3240

caacgaactg aatagaaacg aaaaaagagc catgacacat ttataaaatg tttgacgaca
3300

ttttataaat gcatagcccg ataagattgc caaccaacg cttatcagtt agtcagatga
3360

acttttcctt cgtaagaagt tatttaatta actttgtttg aagacggtat ataaccgtac
3420

tatcattata tagggaaatc agagagtttt caagtatcta agctactgaa ttaagaatt
3480

gttaagcaat caatcggaaa tcgtttgatt gctttttttg tattcattta tagaaggtgg
3540

agtttgtatg aatcatgatg aatgtaaaac ttatataaaa aatagtttat tggagataag
3600

aaaattagca aatatctata cactagaaac gtttaagaaa gagttagaaa agagaaatat
3660

ctacttagaa acaaaatcag ataagtatTT ttcttcggag ggggaagatt atatatataa
3720

gttaatagaa aataacaaaa taatttattc gattagtggg aaaaaattga cttataaagg
3780

aaaaaaatct ttttcaaaac atgcaatatt gaaacagttg aatgaaaaag caaaccaagt
3840

taattaaaca acctatttta taggatttat aggaaaggag aacagctgaa tgaatatccc
3900

ttttgttgta gaaactgtgc ttcattgacgg cttgttaaag taaaaattta aaaatagtaa
3960

aattcgctca atcactacca agccaggtaa aagcaaaggg gctatTTTTg cgtatcgctc
4020

aaaatcaagc atgattggcg gtcgtggtgt tgttctgact tccgaggaag cgattcaaga
4080

aatcaagat acatttacac attggacacc caacgtttat cgttatggaa cgtatgcaga
4140

cgaaaaccgt tcatacacga aaggacattc tgaaaacaat ttaagacaaa tcaatacctt
4200

ctttattgat ttgatattc acacggcaaa agaaactatt tcagcaagcg atattttaac
4260

aaccgctatt gatttaggtt ttatgcctac tatgattatc aaatctgata aaggttatca
4320

agcatatTTT gttttagaaa cgccagtcta tgtgacttca aaatcagaat ttaaattctgt
4380

caaagcagcc aaaataatTT cgcaaaatat ccgagaatat tttggaaagt ctttgccagt
4440

tgatctaacg tgtaatcatt ttggtattgc tcgcatacca agaacggaca atgtagaatt
4500

ttttgatcct aattaccgtt attctttcaa agaattggcaa gattgggtctt tcaaacaaac
4560

agataataag ggctttactc gttcaagtct aacggtttta agcggtacag aaggcaaaaa
4620

acaagtagat gaaccctggg ttaatctctt attgcacgaa acgaaatttt caggagaaaa
4680

gggtttaata gggcgtaata acgtcatgtt taccctctct ttagcctact ttagttcagg
4740

ctattcaatc gaaacgtgcg aatataatat gtttgagttt aataatcgat tagatcaacc
4800

cttagaagaa aaagaagtaa tcaaaattgt tagaagtgcc tattcagaaa actatcaagg
4860

ggctaatagg gaatacatta ccattctttg caaagcttgg gtatcaagtg atttaaccag
4920

taaagattta tttgtccgtc aagggtgggt taaattcaag aaaaaagaa gcgaacgtca
4980

acgtgttcat ttgtcagaat ggaaagaaga tttaatggct tatattagcg aaaaaagcga
5040

tgtatacaag ccttatttag tgacgaccaa aaaagagatt agagaagtgc taggcattcc
5100

tgaacggaca ttagataaat tgctgaaggt actgaaggcg aatcaggaaa ttttctttaa
5160

gattaaacca ggaagaaatg gtggcattca acttgctagt gttaaattcat tgttgctatc
5220

gatcattaaa gtaaaaaaag aagaaaaaga aagctatata aaggcgctga caaattcttt
5280

tgacttagag catacattca ttcaagagac tttaacaag ctagcagaac gccctaaaac
5340

ggacacacaa ctcgatttgt ttagctatga tacaggctga aaataaaacc cgcactatgc
5400

cattacattt atatctatga tacgtgtttg ttttttcttt gctgttttagc gaatgattag
5460

cagaaatata cagagtaaga ttttaattaa ttattagggg gagaaggaga gagtagcccg
5520

ttgggtgtgtg tgtcttgttg ttagtatttg ctagtcaaag tgattaaata
5870

Year	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	